FIG.1

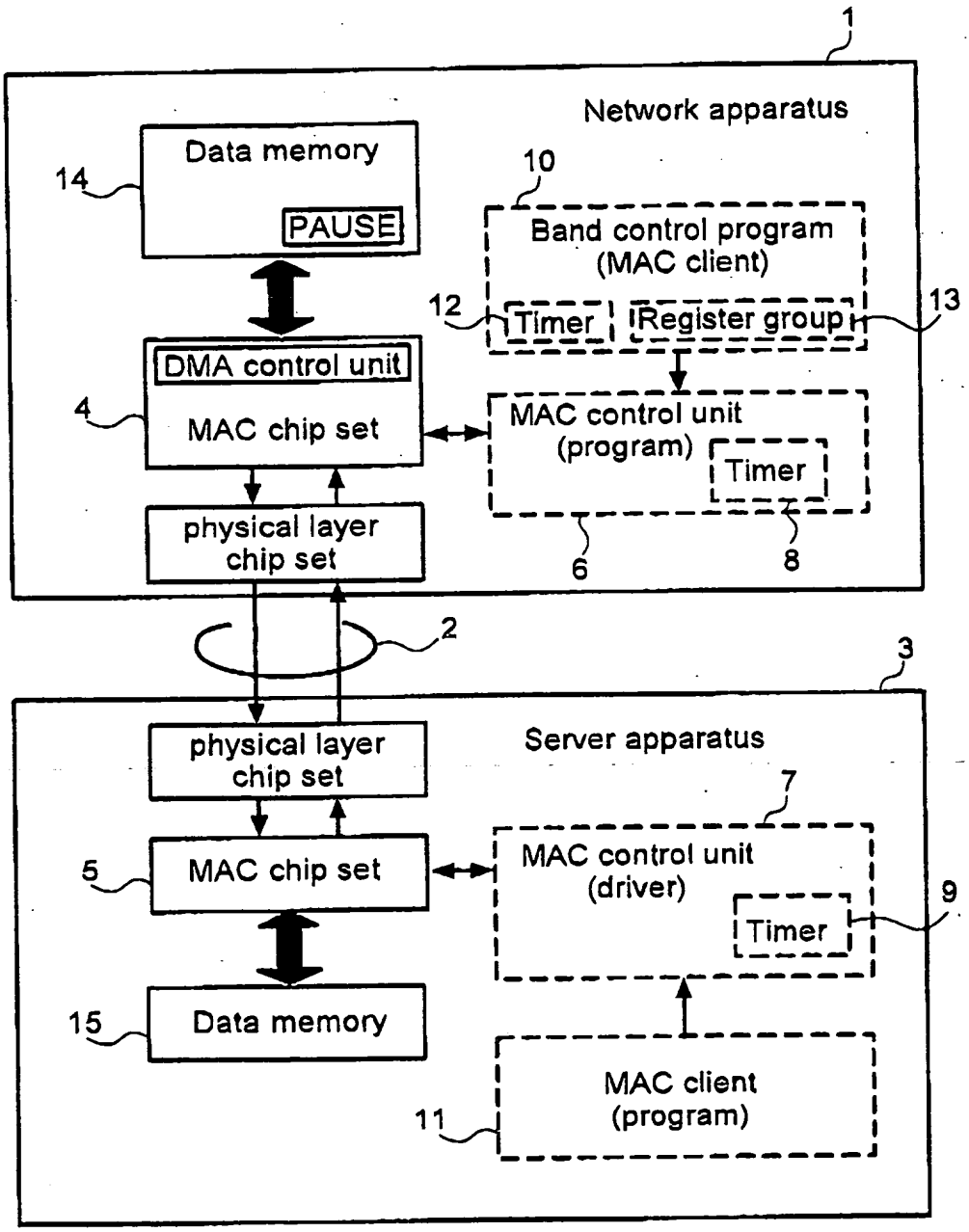

1
Network apparatus
Data memory
14
PAUSE
10
Band control program
(MAC client)
12
Timer
Register group
13
DMA control unit
4
MAC chip set
MAC control unit
(program)
Timer
physical layer
chip set
6
8
2
3
physical layer
chip set
Server apparatus
7
MAC control unit
(driver)
5
MAC chip set
Timer
9
15
Data memory
MAC client
(program)
11

FIG.2

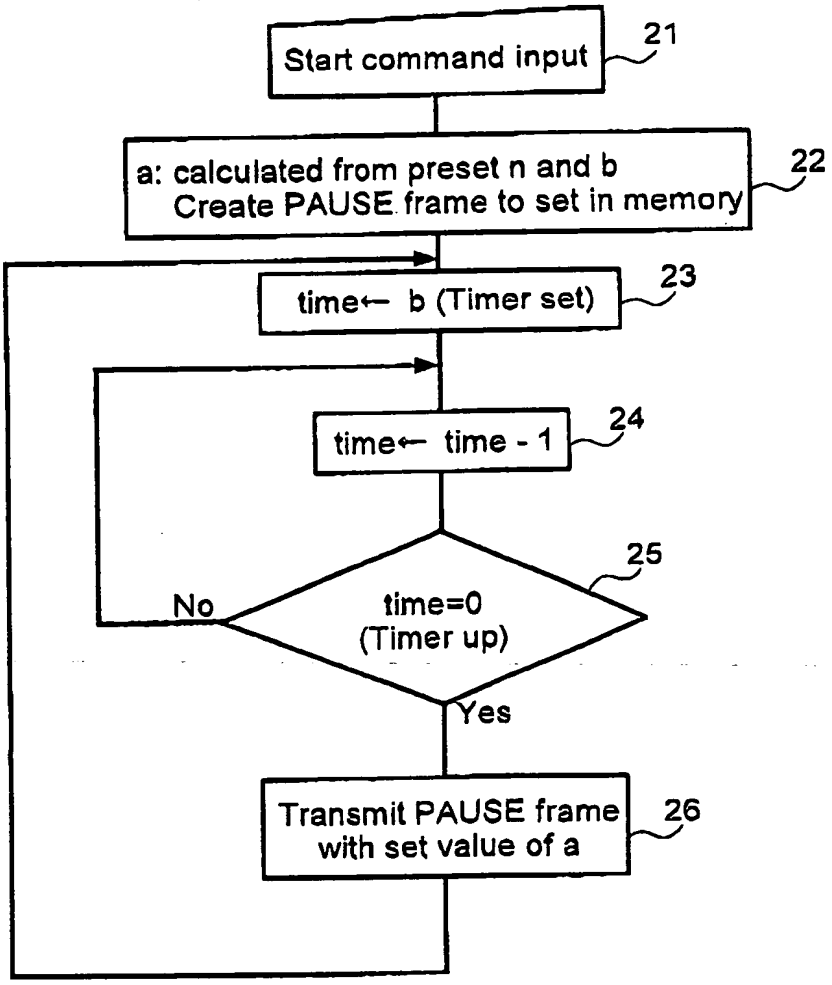

Start command input
21
a: calculated from preset n and b
Create PAUSE frame to set in memory
22
time← b (Timer set)
23
time← time - 1
24
time=0
(Timer up)
25
No
Yes
Transmit PAUSE frame
with set value of a
26

FIG.3

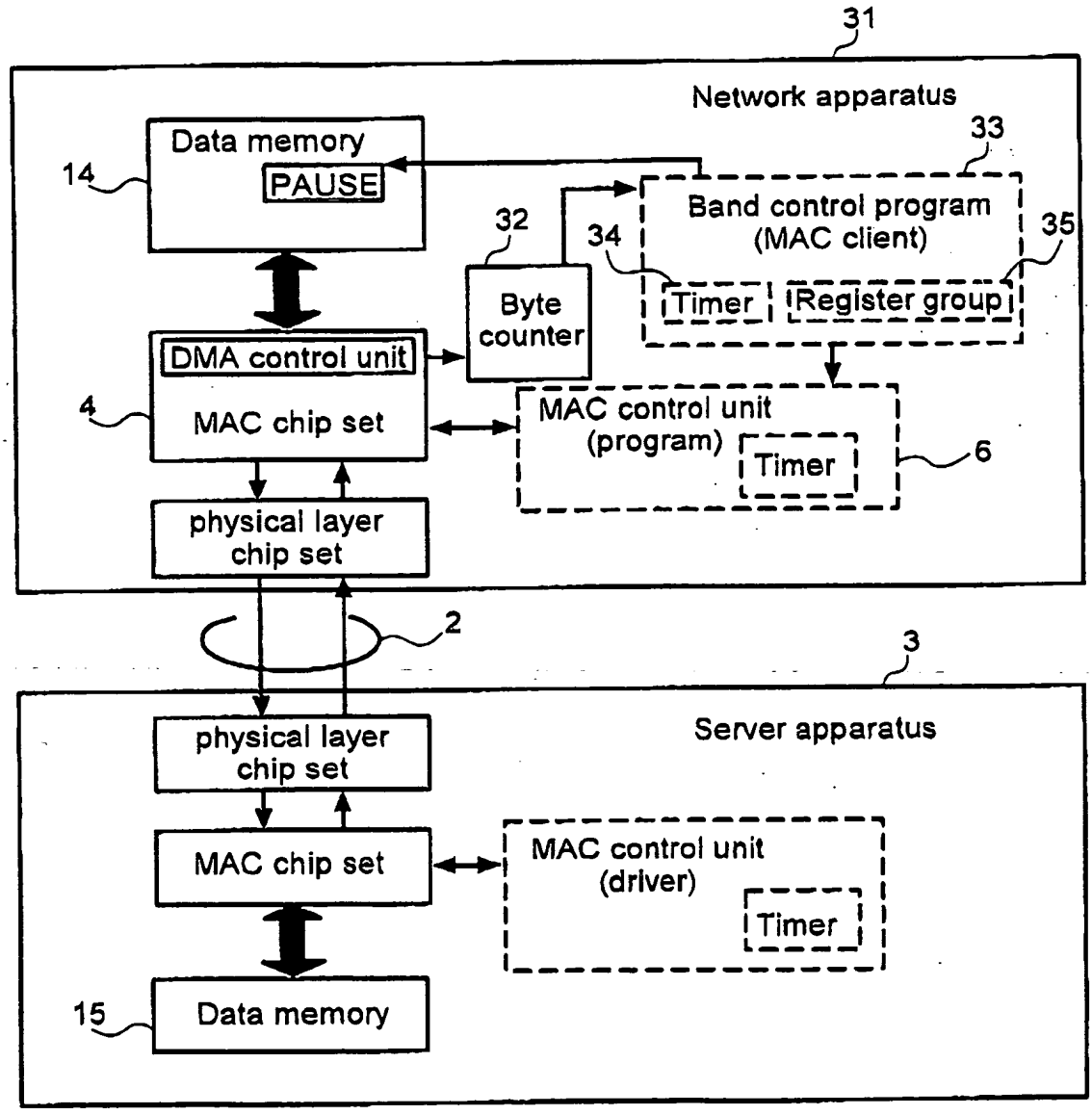

31
Network apparatus
Data memory
PAUSE
14
33
Band control program
(MAC client)
35
32
34
Byte
counter
Timer
Register group
DMA control unit
MAC chip set
4
MAC control unit
(program)
Timer
6
physical layer
chip set
2
3
Server apparatus
physical layer
chip set
MAC chip set
MAC control unit
(driver)
Timer
15
Data memory

FIG.4

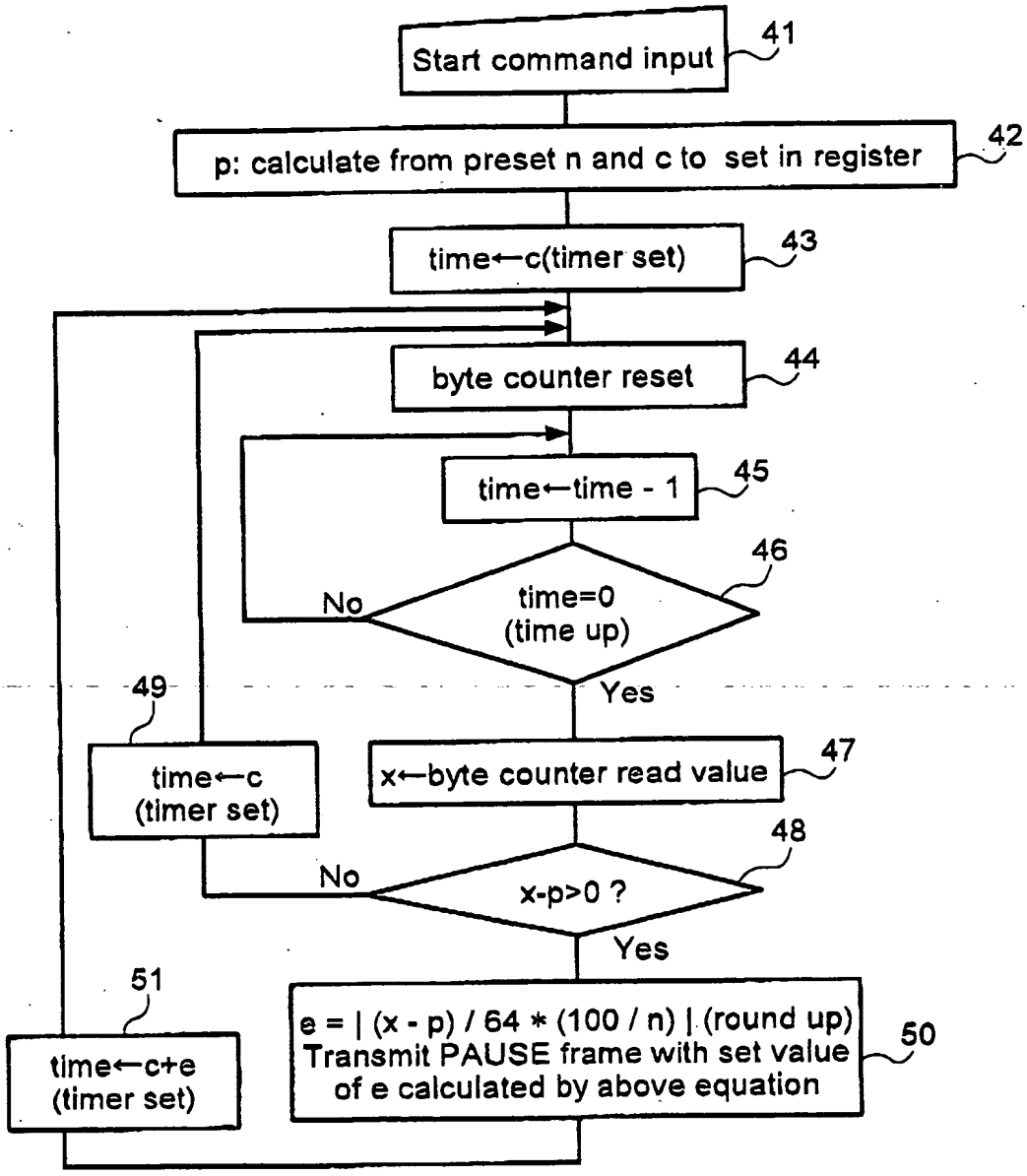

Start command input
41
p: calculate from preset n and c to set in register
42
time←c(timer set)
43
byte counter reset
44
time←time - 1
45
time=0
(time up)
46
No
Yes
x←byte counter read value
47
x-p>0 ?
48
No
Yes
time←c
(timer set)
49
e = | (x - p) / 64 * (100 / n) | (round up)
Transmit PAUSE frame with set value
of e calculated by above equation
50
time←c+e
(timer set)
51

FIG.5

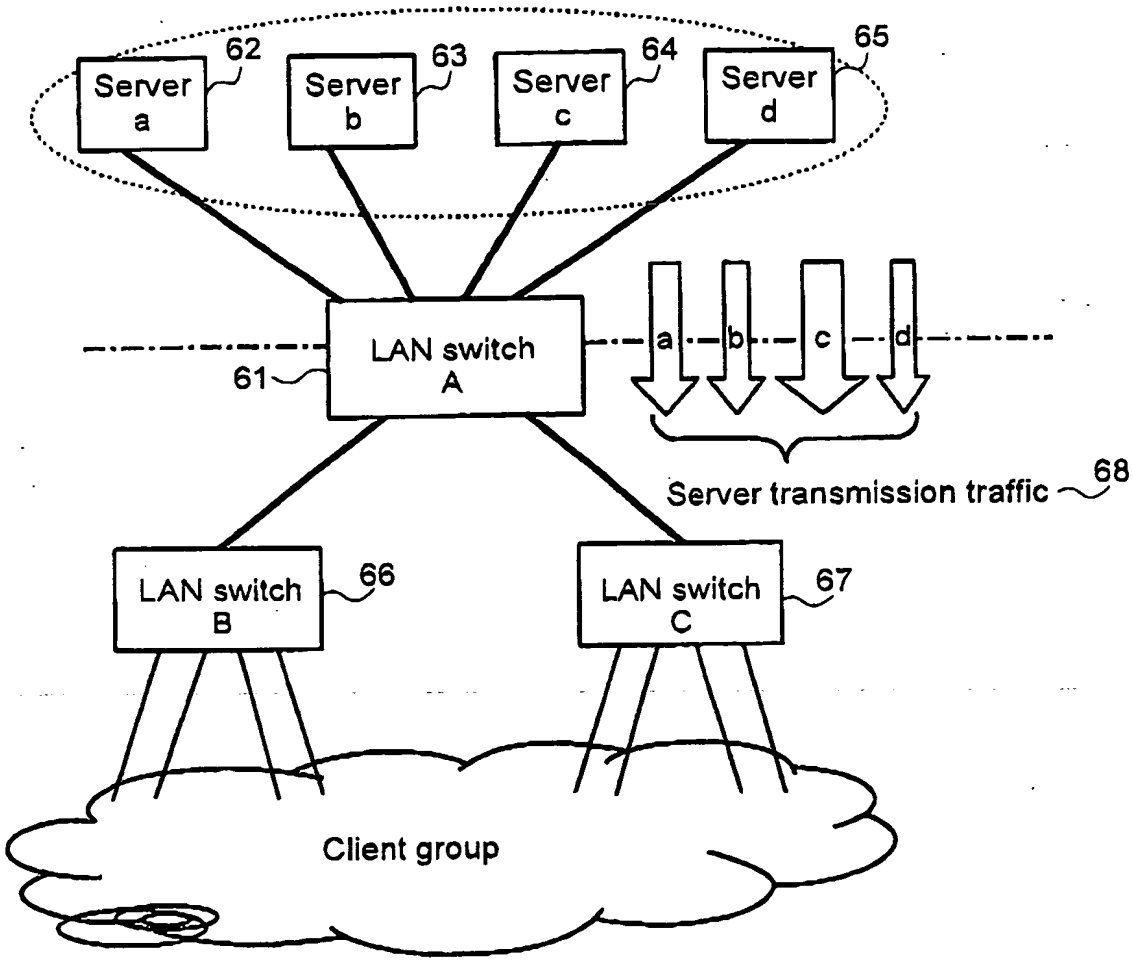

Server a
62
Server b
63
Server c
64
Server d
65
LAN switch A
61
a
b
c
d
Server transmission traffic
68
LAN switch B
66
LAN switch C
67
Client group

FIG.6

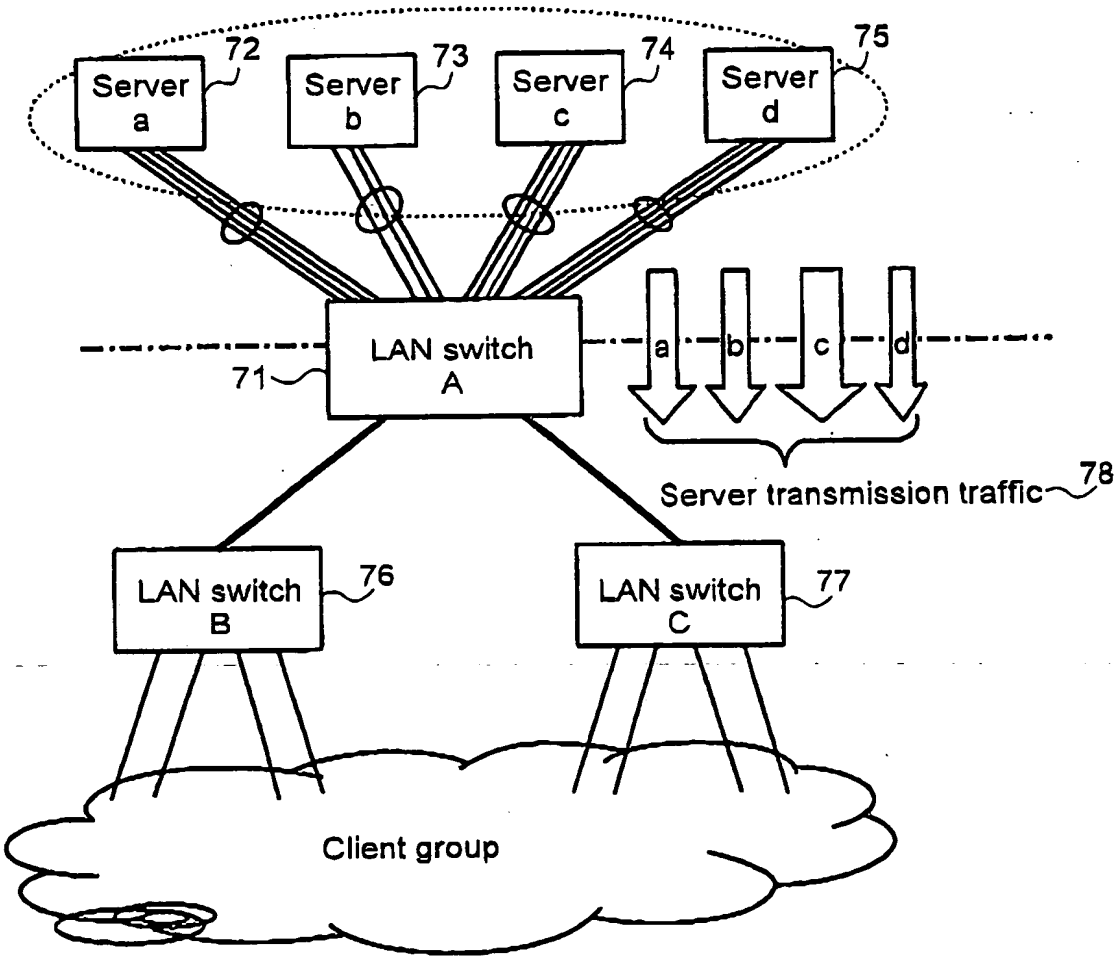

Server a
72
Server b
73
Server c
74
Server d
75
LAN switch A
71
a
b
c
d
Server transmission traffic
78
LAN switch B
76
LAN switch C
77
Client group

FIG.7

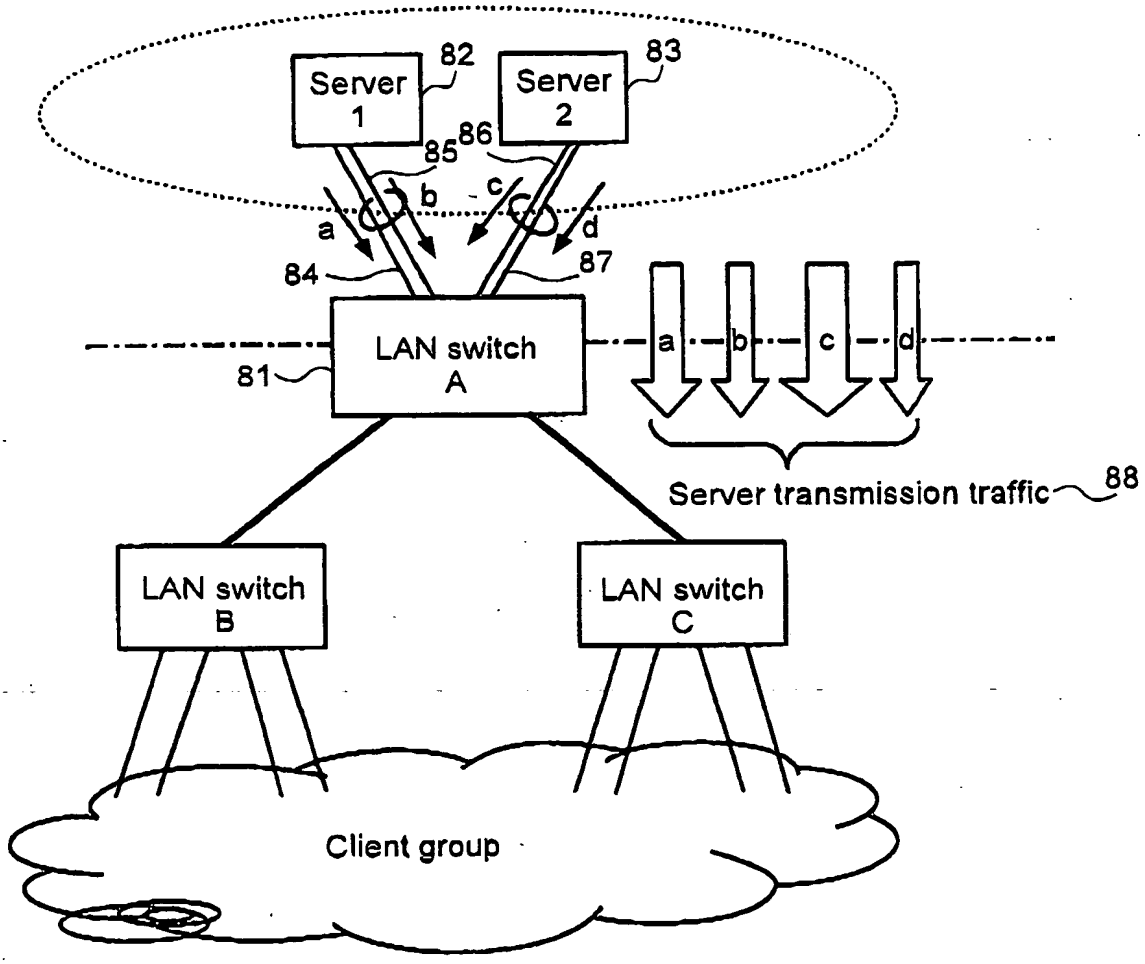

Server 1
82
Server 2
83
85
86
a
b
c
d
84
87
LAN switch A
81
a
b
c
d
Server transmission traffic
88
LAN switch B
LAN switch C
Client group

FIG.8

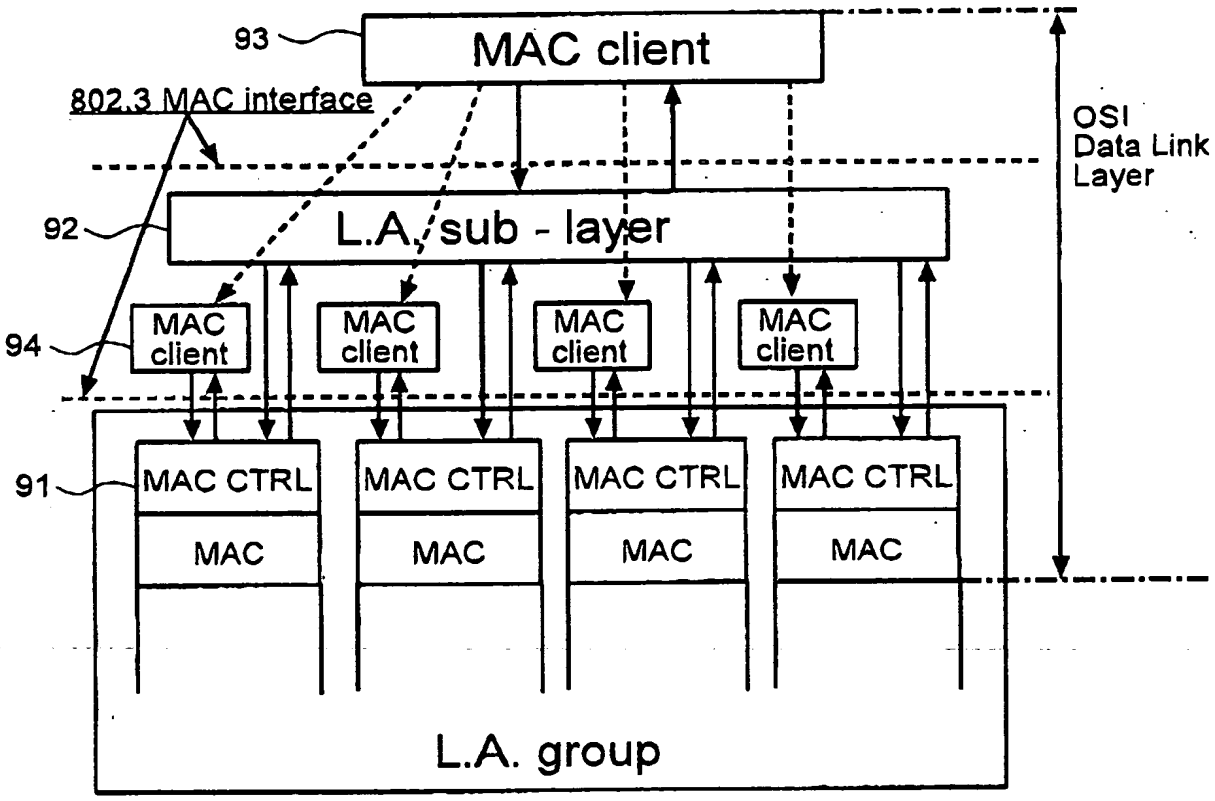

93
MAC client
802.3 MAC interface
OSI
Data Link
Layer
92
L.A. sub - layer
94
MAC
client
MAC
client
MAC
client
MAC
client
91
MAC CTRL
MAC CTRL
MAC CTRL
MAC CTRL
MAC
MAC
MAC
MAC
L.A. group

FIG.9

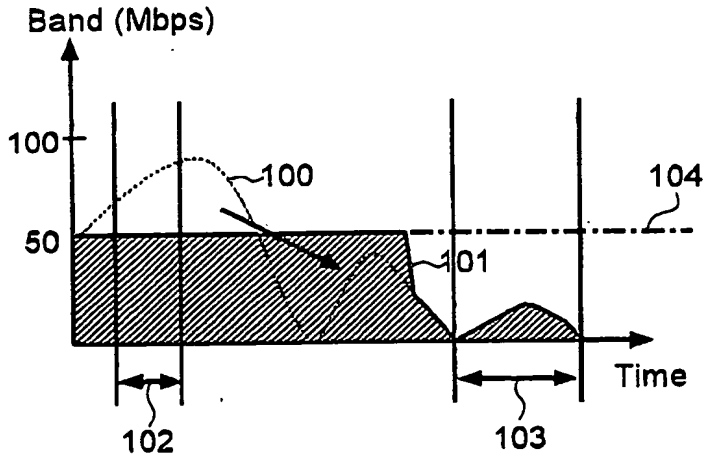

Band (Mbps)
100
50
100
101
104
Time
102
103

FIG.10

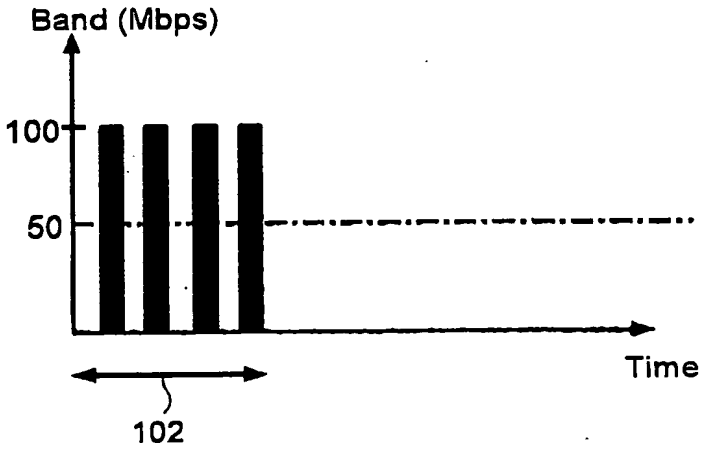

Band (Mbps)
100
50
Time
102

FIG.11

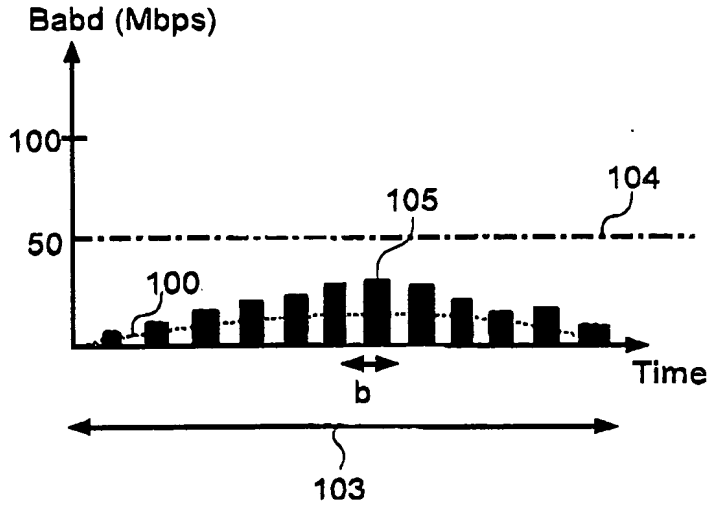

Babd (Mbps)
100
50
105
104
100
Time
b
103

FIG.12

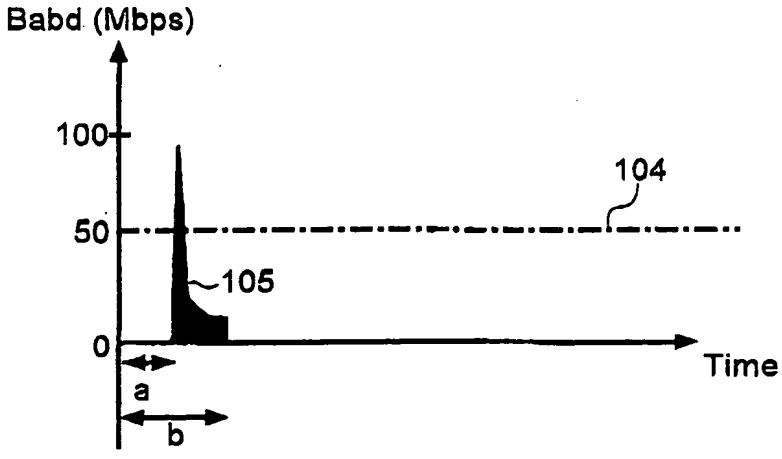

Babd (Mbps)
100
50
104
105
0
Time
a
b

FIG.13

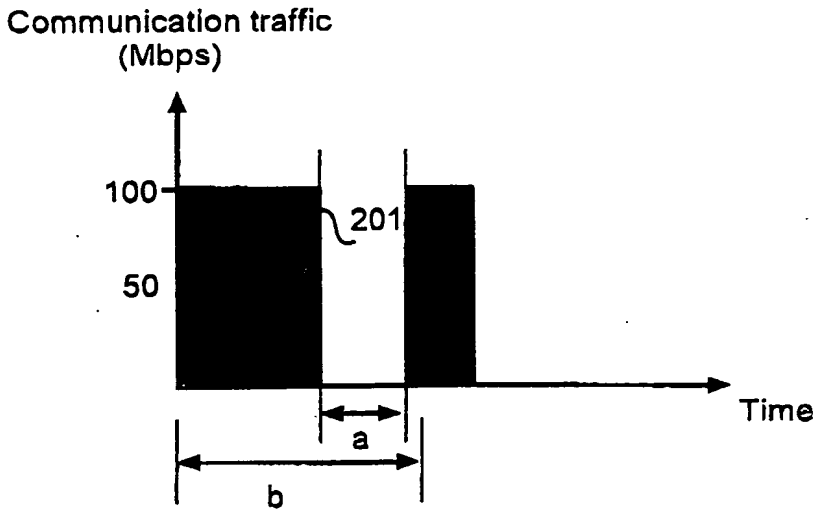

Communication traffic
(Mbps)
100
50
201
Time
a
b

FIG.14

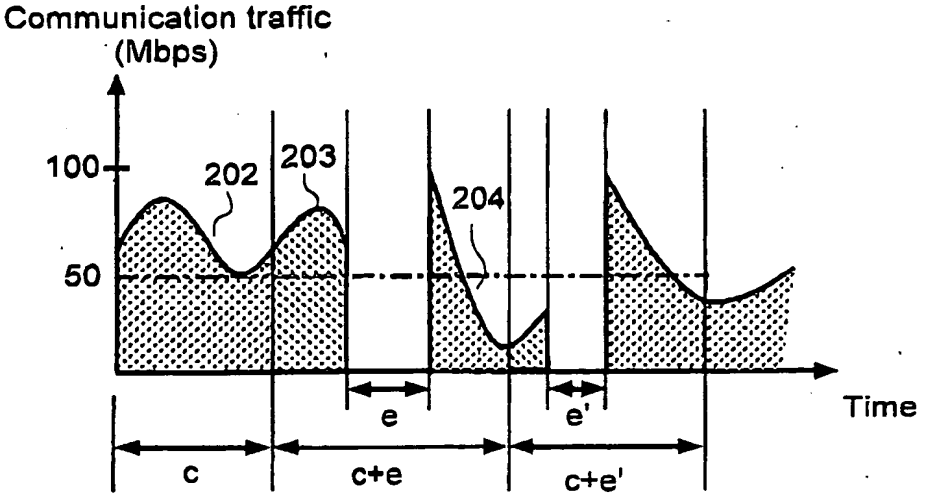
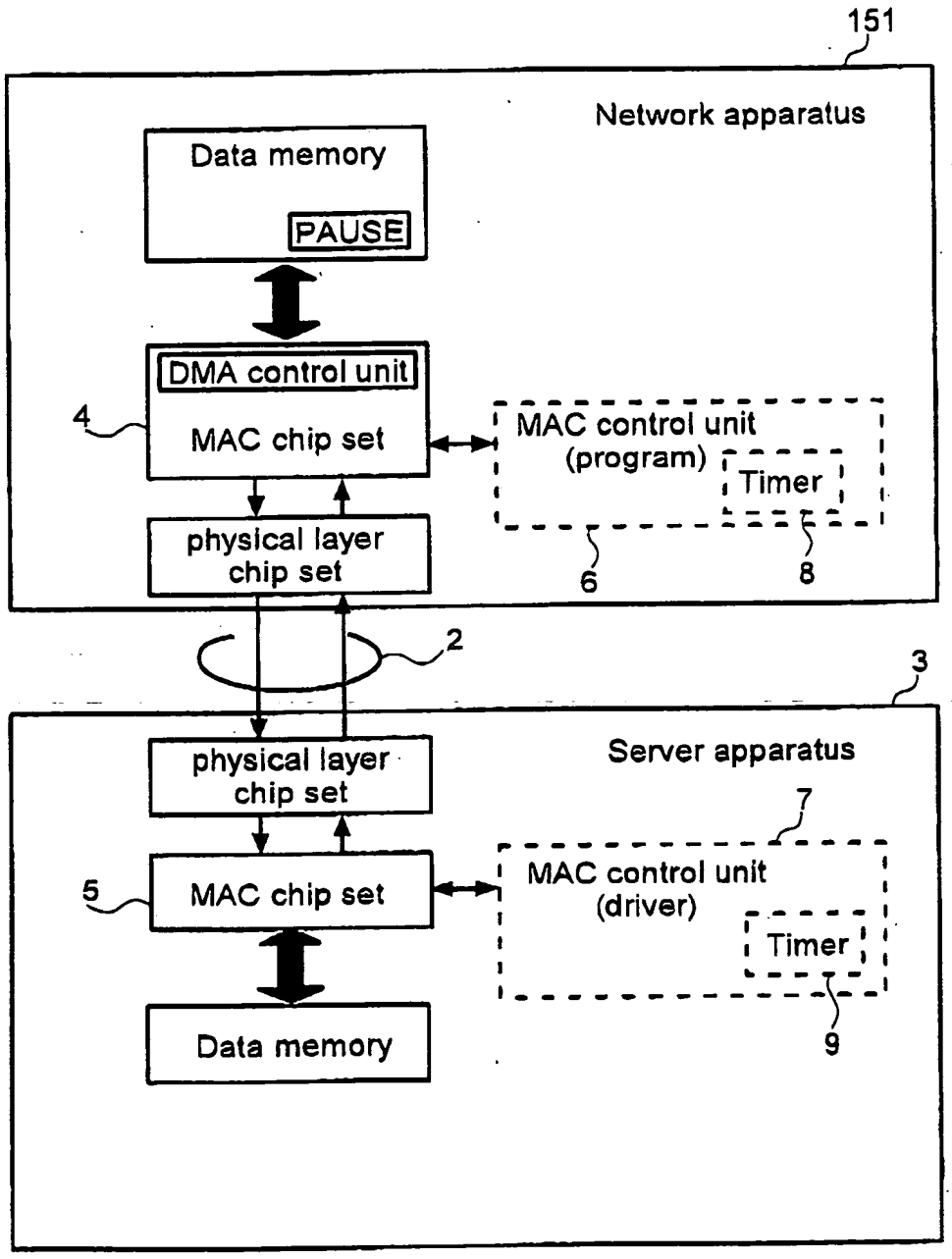

Communication traffic
(Mbps)
100
50
202
203
204
Time
e
e'
c
c+e
c+e'

FIG.15


151
Network apparatus
Data memory
PAUSE
DMA control unit
4
MAC chip set
MAC control unit
(program)
Timer
physical layer
chip set
6
8
2
3
Server apparatus
physical layer
chip set
7
5
MAC chip set
MAC control unit
(driver)
Timer
Data memory
9